

Serial No.: 10/688,541
Filing Date: October 17, 2003

Customer No. 26,289
Attorney Docket No. 2001JP309

Complete Set of Pending Claims

1. (currently amended) An optical film, for use in a liquid crystal display which comprises a liquid crystal cell and a back light unit, comprising a layered product of ~~a light scattering film that scatters and transmits light and comprises at least two phases having different refractive indices from each other, and a reflective polarizer by which light is selectively P/S converted,~~

(1) a reflective polarizer by which light is selectively P/S converted, which is disposed on the back light unit, and

(2) a light scattering film that scatters and transmits light and comprises at least two phases having different refractive indices from each other, which is disposed on the reflective polarizer,

wherein at least one of the phases which has the greater refractive index in the light scattering film has pillar structures extending in the thickness direction of the film, and further where the refractive index changes gradually at the interface of the greater refractive index phase and another phase, and furthermore the transmittance of the light scattering film in the normal direction of the film is not less than 4 %, and wherein an absolute value of a light incident angle where the scattering film has a maximum scattering performance is larger than zero degrees, when zero degrees is a light incident angle that light enters the film in the normal direction of the film.

2. (canceled)

3. (previously presented) The optical film according to Claim 1, wherein axis lines of the pillar structures extending in the thickness direction of the light scattering film are in parallel with each other and the direction of the axis lines thereof are orientated in the normal direction to the film.

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4. (previously presented) The optical film according to Claim 1, wherein axis lines of the pillar structures extending in the thickness direction of the light scattering film are in parallel with each other and the direction of the axis lines are inclined with respect to the normal direction to the film.
5. (previously presented) The optical film according to claim 1, wherein difference in refractive indices between at least two phases having different refractive indices of the light scattering film is in a range of 0.005 to 0.1.
6. (previously presented) The optical film according to claim 1, wherein said light scattering film is made from a polymer material having a radiation sensitive property.
7. (previously presented) The optical film according to claim 1, wherein said reflective polarizer is of a lamination type.
8. (previously amended) The optical film according to claim 1, wherein said reflective polarizer is of a cholesteric liquid crystal type.
9. (previously presented) The optical film according to claim 3, wherein difference in refractive indices between at least two phases having different indices of the light scattering film is in a range of 0.005 to 0.1.
10. (previously presented) The optical film according to claim 3, wherein said light scattering film is made from a polymer material having a radiation sensitive property.
11. (previously presented) The optical film according to claim 3, wherein said reflective polarizer is of a lamination type.

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12. (previously amended) The optical film according to claim 3, wherein said reflective polarizer is of a cholesteric liquid crystal type.
13. (previously presented) The optical film according to claim 4, wherein difference in refractive indices between at least two phases having different refractive indices of the light scattering film is in a range of 0.005 to 0.1.
14. (previously presented) The optical film according to claim 4, wherein said light scattering film is made from a polymer material having a radiation sensitive property.
15. (previously presented) The optical film according to claim 4, wherein said reflective polarizer is of a lamination type.
16. (previously amended) The optical film according to claim 4, wherein said reflective polarizer is of a cholesteric liquid crystal type.
17. (new) The optical film according to Claim 1, wherein the scattering performance of the scattering film is enhanced when the absolute value of the incident angle changes from zero degrees to the absolute value of the incident angle with a maximum scattering performance, and the scattering performance decreases after the absolute value of the incident angle with maximum scattering performance.
18. (new) The optical film according to Claim 1, wherein the absolute value of the incident angle with a maximum scattering performance is around 20 degrees.